

### ABSTRACT

A scalable, high-speed router for routing packets of information through an interconnected network comprises an interface for receiving a packet containing header and data information; a device for extracting routing information from the header of an arrived packet and generating a corresponding header packet for the arrived packet; a memory device for storing the data information of the arrived packet at predetermined memory locations; a device for processing the corresponding header packet to determine a route for the arrived packet and assigning packet forwarding information to the header packet; and, a device for retrieving the data information from the predetermined memory locations and forwarding both the data and header packet containing the packet forwarding information to the interface for routing the packet to a further destination in accordance with the packet forwarding information. The processing device includes devices performing filtering, route-table lookup and flow identification functions and which devices are organized in a pipelined fashion for successive, high-speed operations on the header packet. The router ensures that the arrived packet is forwarded in accordance with any quality of service requirements and flow specifications.